

FINAL EXAMINATION

Anticipating Hazardous Weather and Community Risk (IS271)

The following final examination is designed to find out how much you have learned from this course about weather, weather hazards, and community risk.

Anyone with a postal ZIP Code for the U.S. or its territories can have their exam graded and receive a certificate of completion from the Federal Emergency Management Agency's Independent Study program. After completing the course, print this page with the final exam questions, and then go to

<http://training.fema.gov/EMIWeb/IS/examnotice.asp?eid=is271>

to find the **electronic answer sheet**. (Alternatively, open a second browser, bring up the answer sheet URL, and toggle between it and this page.) Completing and submitting the electronic answer sheet with the required information will enroll you in the course and make you eligible for a certificate, if you score 75% or higher. To have your exam graded and to receive a certificate, you must complete the requested information, including your postal ZIP Code, and achieve a passing grade.

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FINAL EXAM

Anticipating Hazardous Weather and Community Risk (IS271)

The final examination consists of 50 questions (ignore spaces on the answer sheet higher than 50) and should take no more than 60 minutes to complete. Carefully read each question and all the possible answers before marking your responses on the electronic answer sheet. If you prefer to submit your answers in writing, print the completed electronic answer sheet and exit without submitting electronically, and mail the answers to Independent Study, 16825 South Seton Ave., Emmitsburg, MD 21727. We recommend you also print a copy of the electronic answer sheet for your records before submitting. There is only one correct response for each test item. You may refer to the course materials to help you answer the questions.

1. The NWS recommends that emergency managers have more than one means of receiving Watches and Warnings

- a. True
- b. False

2. NOAA Weather Radio (with SAME):

- a. Can be heard everywhere in the country
- b. Costs more than EMWIN
- c. Provides the same information as EMWIN
- d. Can monitor for watches/warnings in your area and sound an alert

3. Which of the following represents a variable environmental factor?

- a. Soil saturation
- b. Soil type
- c. Locations of mountains or hills
- d. Locations of dams

4. The FEMA program that helps build disaster resistant communities is:

- a. StormReady
- b. Project Impact
- c. SkyWarn
- d. Safety First

5. A telephone alert system:

- a. Calls 911 for you when the smoke alarm goes off
- b. Forwards calls from your dispatch center to your EOC
- c. Pages you when a warning is issued for your area
- d. Calls residents in a certain region and delivers a message

6. EMWIN provides:

- a. A local radio channel for law enforcement communication
- b. Weather information from the NWS for emergency managers
- c. Two-way communication with the NWS via satellite
- d. A way to warn citizens via the telephone system

7. An example of an indirect weather observation system is:

- a. Buoys
- b. ASOS
- c. Radar
- d. Radiosondes

8. Long-range forecast products tend to be more accurate than short-range ones.

- a. True
- b. False

9. The forecast discussion you are reading one summer day mentions that instability is

high. You conclude that:

- a. Conditions are right for a severe thunderstorm to occur
- b. Rising motions in the atmosphere are suppressed, so clear weather is likely
- c. A front is going through the area
- d. The forecaster's confidence in model results is very low

10. Advisories are issued:

- a. Only for flooding situations
- b. For threats that are likely to occur a month or more in the future
- c. For threats that are not expected to be dangerous
- d. To raise awareness about existing or imminent threats

11. The NWS employee who can help set up spotter groups and public awareness activities is:

- a. The Warning Coordination Meteorologist (WCM)
- b. The Science and Operations Officer (SOO)
- c. The Lead Duty Forecaster
- d. The Meteorologist in Charge (MIC)

12. Large water bodies often affect weather downwind by:

- a. Orographic lifting
- b. Creating mesoscale fronts when the land temperature is different than the water temperature
- c. Creating stable air parcels
- d. Altering the course of the jet stream

13. An inversion is a region in the atmosphere where:

- a. Temperature decreases with height and air parcels are likely to stop rising
- b. Temperature decreases with height and air parcels are likely to continue rising
- c. Temperature increases with height and air parcels are likely to stop rising
- d. Temperature increases with height and air parcels are likely to continue rising

14. Who is authorized to initiate official watches and warnings?

- a. The National Weather Service
- b. Registered private weather services
- c. Certified media meteorologist using Doppler radar
- d. Any of the above

15. If your community has a Presidentially Declared Disaster, there is a 95% chance it will be weather or flood related.

- a. True

b. False

16. The forecast discussion products provide:

- a. Climate forecasts
- b. Forecaster reasoning
- c. Comparisons of radar images from different Weather Forecast Offices
- d. Temperature probabilities

17. A cold front typically has a _____ slope and _____ ahead of it.

- a. Steep, thunderstorms
- b. Shallow, steady precipitation
- c. Steep, clearing weather
- d. Shallow, thunderstorms

18. A Watch means that:

- a. A severe weather event is imminent or occurring
- b. Citizens should take shelter immediately
- c. A severe weather event has occurred in a nearby county
- d. The risk of hazardous weather has increased significantly

19. Forecasting precipitation type (rain, snow, sleet, ice) is difficult because:

- a. You need to know what kind of cloud nuclei are in the atmosphere
- b. The lifting process determines the type
- c. You need to know the depth of the melting and freezing layers in the air
- d. You need to know the depth of the moist and dry layers

20. A threats analysis should include analyzing the vulnerabilities of power generation, water, and sewage treatment facilities.

- a. True
- b. False

21. The water vapor image shows a dark black area over your state. This indicates that:

- a. There is ample mid-level moisture for storms today
- b. There is ample low-level moisture for storms today
- c. The atmosphere is too dry to support storms today
- d. There is little moisture in the middle levels of the atmosphere

22. The weather behind a cold front tends to clear because:

- a. Cold air is more dense than warm air
- b. Cold air is more stable than warm air

- c. Lifting mechanisms are no longer in place
- d. All of the above

23. As the emergency manager, you call the Weather Forecast Office (WFO) and report that you have experienced heavy, wind-driven rain for the past 30 minutes, and that your dispatch center has received calls about small streams flooding on the southern edge of your community. The WFO uses this information to:

- a. Complete the application to become a StormReady community
- b. Define areas to be evacuated
- c. Send the Warning Coordination Meteorologist to your area to report conditions
- d. Refine their forecast to alert others in the storm's path

24. A climate forecast is typically a short-range forecast.

- a. True
- b. False

25. When forecasts are wrong, it is often because:

- a. Indirect observation methods cannot detect fronts and other weather systems
- b. Too many observations slow down the computer processing
- c. The forecast is not updated during the times when the WFOs are closed
- d. Something happens in the atmosphere that is more complex than the models can simulate

26. A front that moves very little over time is termed a ____ front.

- a. Dryline
- b. Cold
- c. Warm
- d. Stationary

27. Troughs tend to bring stormy weather.

- a. True
- b. False

28. In two days your community is hosting the State baseball championship and expecting record crowds. The Day 2 Convective Outlook indicates your area could have severe weather on game day. As emergency manager, you should:

- a. Continue to monitor forecast products and coordinate with the WFO
- b. Discuss the situation with event organizers to review their safety plans regarding severe weather
- c. Inform public safety agencies in your community about the forecast
- d. a, b, and c

29. Building code requirements are a factor in assessing community risk:

- a. True
- b. False

30. Convection is commonly caused by:

- a. Heating of the earth's surface
- b. Inversions
- c. Cold, sinking air masses
- d. Saturated soil

31. You read in the forecast for today that strong westerly winds are expected. This means that the winds will blow from the west toward the east.

- a. True
- b. False

32. The Zone Forecast mentions: "CHANCE OF RAIN 60 PERCENT." This means that:

- a. Sixty percent of the forecast area will receive rain and 40% will be dry
- b. Rain will fall during 60% of a 24-hour period
- c. Any given point in the forecast area has a 60% chance of receiving rain
- d. Sixty percent of the towns and cities in the zone will receive rain

33. One reason the poles are colder than the equator is because radiation has to travel through a greater depth of atmosphere to reach the surface at the poles.

- a. True
- b. False

34. Storms that are fairly small in scale and short-lived, like tornadic storms, are synoptic scale events.

- a. True
- b. False

35. The State Forecast issued on Monday says that forecast through Friday is for "A SLIGHT CHANCE OF AFTERNOON AND EVENING THUNDERSTORMS EACH DAY." Given that the chance of precipitation is low, you should look for an updated forecast on:

- a. Tuesday
- b. Friday
- c. Saturday
- d. Next Monday

36. It is generally colder during the winter season in the United States because the earth is

farther away from the sun.

- a. True
- b. False

37. The Forecast Discussion says "A WEAK PRESSURE GRADIENT IS EXPECTED TO PERSIST, KEEPING RAIN OVER THE AREA FOR SEVERAL DAYS." This probably means that:

- a. Winds are strong and will provide lift for storms
- b. Winds are weak and are not able to move the weather system away
- c. Winds are strong and are causing orographic lifting
- d. Winds are weak and dewpoints are low

38. What group issues Tornado Watches?

- a. Local Weather Forecast Office
- b. Hydrometeorological Prediction Center
- c. Storm Prediction Center
- d. Tornado Prediction Center

39. Examples of lifting mechanisms include:

- a. Cold fronts and warm fronts
- b. Inversions and convergence
- c. Topography and drylines
- d. a and c

40. Severe convective weather is likely under which conditions?

- a. Strong surface heating and an unstable atmosphere
- b. Orographic lifting and a stable atmosphere
- c. A frontal passage and a strong inversion
- d. A strong high and a stable atmosphere

41. Severe winter weather is most likely under which conditions?

- a. A dryline passage
- b. An intensifying low pressure system
- c. A gustfront
- d. A 500 mb ridge

42. Condensation is a process that typically occurs:

- a. When air is cooled
- b. When air sinks
- c. When dewpoints are low
- d. a and b

43. Which NWS product would an emergency manager look for at the beginning of the day to determine the potential for thunderstorms during the day?

- a. Hourly report
- b. Storm summary
- c. Convective Day 1 Outlook
- d. Nowcast

44. Lift is a process that:

- a. Cools air parcels and can lead to condensation
- b. Warms air parcels and can lead to condensation
- c. Requires convective heating
- d. Requires dry air

45. What group issues Tornado Warnings?

- a. Local Weather Forecast Office
- b. Hydrometeorological Prediction Center
- c. Storm Prediction Center
- d. Tornado Prediction Center

46. Low pressure is usually associated with rising air and cloudy conditions.

- a. True
- b. False

47. In a stable air mass:

- a. Thunderstorms frequently develop
- b. Haze or smog frequently develop
- c. There are large day-to-day temperature changes
- d. Winds tend to be very strong

48. Convergence happens in the vicinity of a front.

- a. True
- b. False

49. The weather forecast says "SNOW IS LIKELY TODAY." What is the probability of snow?

- a. 30%
- b. 50%
- c. 60%
- d. 80%

50. Which of the following is NOT a consideration of a threats analysis?

- a. Distance to nearest NWS office
- b. Frequency of hazardous weather
- c. Level of severity to plan for
- d. Locations of special needs populations

Return Answer Sheet to:

Office of Independent Study
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16825 South Seton Avenue
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